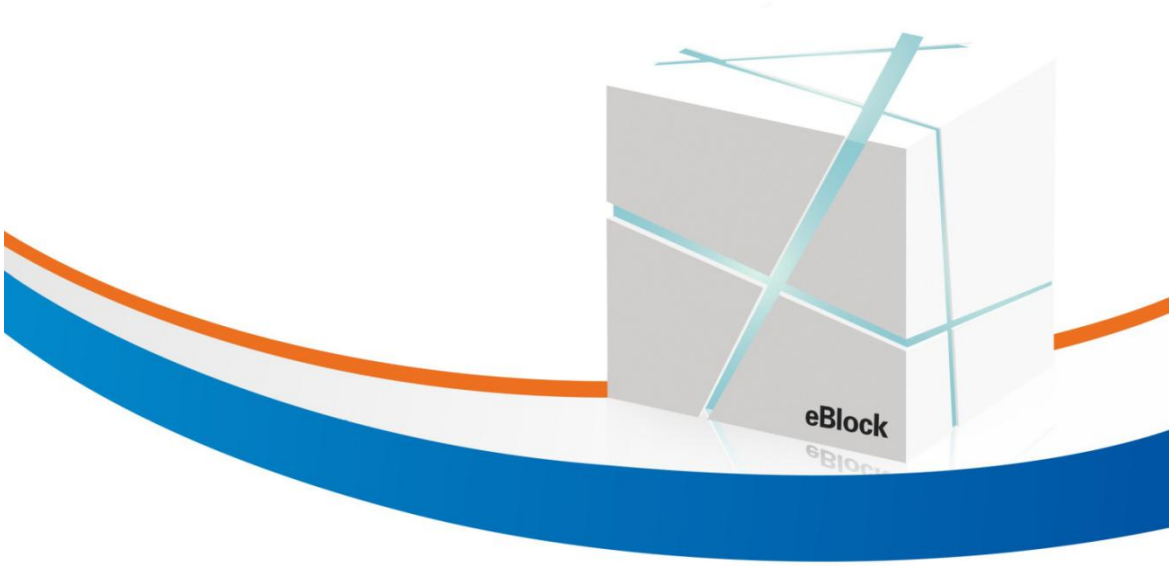
JDENERGY 奇点能源

eBlock-250用户手册

eBlock-250 User Manual



西安奇点能源股份有限公司

Xi'an JD Energy Co., Ltd.

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1 关于本手册

1. About the Manual

1.1 符号解释

1.1 Symbolic Interpretation

为了更好的使用本手册，请仔细阅读以下符号说明：

For better use of this Manual, please read the following symbol instructions carefully:

符号 Symbol	符号名称 Symbol Name	符号含义 Symbol Meaning
	电击危险标识 Shock hazard identification	此符号标识的地方都是存在触电危险的部位，可能会对用户的安全产生危险，请勿随意触摸。 There is a risk of electric shock of places marked by this symbol, which may pose a danger to the user's safety. Please do not touch them casually.
	接地标识 Grounding sign	保护地线连接位置 Location of protective ground wire connection
	智慧能量块序列号 Smart eBlock S/N	序列号信息 S/N information

1.2 适用范围

1.2 Scope of Application

本手册包含详细的产品信息和使用说明，适用于西安奇点能源股份有限公司eBlock-250系列智慧能量块。

The Manual details the product information and instructions for use, applicable to the eBlock-250 series smart eBlock of Xi'an JD Energy Co., Ltd.

手册内容将不断更新升级，可能存在与实物略有不符的情况，用户请以所购产品实物为准，并可通过销售渠道索取最新版本的手册资料。

The content of the Manual will be continuously updated and upgraded. In case of slight discrepancies between this Manual and the actual product, the latter one shall prevail. Users are allowed to request the latest version of the Manual through sales channels.

1.3 智慧能量块简介

1.3 Introduction to Smart eBlock

智慧能量块（eBlock），是电化学储能系统中，能量存储和转换的集成装置，可控制蓄电池的充电和放电过程，进行交直流的变换，在无电网情况下可以直接为交流负荷供电。

The smart eBlock is an integrated device for energy storage and conversion in electrochemical energy storage systems, controlling the charging and discharging processes of batteries, performing AC/DC conversion, and directly supplying power to AC loads in the absence of a power grid.

智慧能量块（eBlock）由电池模块（pack）、储能变流器（PCS）、控制器（BCS，集成于PCS内部）、冷水机组、柜体结构件等构成。BCS控制器接受上级管理机（eLink）控制指令，根据功率指令的符号及大小控制变流器对电池进行充电或放电，实现对电网有功功率及无功功率的调节。

The smart eBlock consists of the battery module (pack), power conversion system (PCS), burner control system (BCS, integrated inside PCS), water cooling unit and cabinet structural components. The BCS receives control instructions from the upper manager (eLink), and controls the PCS to charge or discharge the battery based on the symbol and size of power instructions, thus adjusting the active and reactive power of the power grid.

1.4 安全说明

1.4 Safety Instructions

	**警告！** **Warning!** 使用和操作智慧能量块时，请仔细阅读安全说明。 Please read the safety instructions carefully when using and operating the smart eBlock.
	警告！ **Warning!** 电池存在潜在的危险，在操作和维护时必须采取适当的防护措施！电池的维护必须由具有电池专业知识并经过安全培训的人士执行。 Batteries being potentially dangerous, proper protective measures must be taken during operation and maintenance! The maintenance of batteries must be conducted by personnel with battery expertise and safety training.

✓戴橡胶手套和穿绝缘鞋。

✓Rubber gloves and insulating shoes should be worn.

✓摘掉戒指、手表和其他的金属物件。

✓Rings, watches and other metal objects should be removed.

✓使用带绝缘手柄的工具。

✓Tools with insulated handle should be used.

✓不要将工具或其它金属物件放置在设备上。

✓Do not place tools or other metal objects on the equipment.

✓实施配线及维修时，请务必切断交流开关。

✓Please be sure to turn off the AC switch when performing wiring and maintenance.

✓为防止触电危险，严禁非专业人员私自打开智慧能量块。

✓Non-professionals are strictly prohibited from opening the smart eBlock without authorization to avoid electric shock.

✓本设备应避开火源，不能安装在易燃、易爆的环境中；也不要安装在没有防火保护设备旁边，包括汽油发电机、柴油桶或其它易燃品等。

✓ This equipment should be installed away from ignition sources, as well as flammable or explosive environment; It should also not be installed next to equipment without fire protection, including gasoline generators, diesel barrels or other flammable materials.

✓由于系统在工作时电流较大，接线时应保证所有接线柱和螺栓紧固，保证良好接触。

✓ Due to the high current of the system during operation, all terminals and bolts should be tightened to ensure good contact during wiring.

✓设备应由专业技术人员进行操作。

✓The equipment should be operated by professionals.

✓即使没有外部电源输入的情况下，设备内部也可能有高电压存在，严禁触摸。

✓Do not touch the equipment since there is high voltage inside even without external power input.

✓不要将任何物件放入智慧能量块内部空洞处或打开的器件中。

✓No articles should be placed into voids or open devices inside the smart eBlock.

✓即使所有的开关和断路器都关断，智慧能量块中的危险电压仍然存在，任何需要打开或移动的操作都只能由专业的技术人员进行实施。

✓ Dangerous voltage in the smart eBlock survives when all switches and circuit breakers are turned off. Only professionals can open, move or operate the equipment.

2 产品介绍

2. Product Introduction

2.1 产品简介

2.1 Brief Introduction

2.1.1 功能介绍

2.1.1 Function introduction

eBlock-250系列智慧能量块是400V三相并网智慧能量块，主要功能是将电池的直流电能转化为交流电能并馈入电网，或将电网交流电能转化为直流电能给电池充电。

The eBlock-250 series is a 400V three-phase grid-connected smart eBlock, with the main function of converting direct current of the battery into alternating current and integrating it into the grid, or converting alternating current of the grid into direct current to charge the battery.

2.1.2 型号介绍

2.1.2 Model introduction

智慧能量块型号说明如图 2-1 所示：

The model description of the smart eBlock is shown in Fig. 2-1:

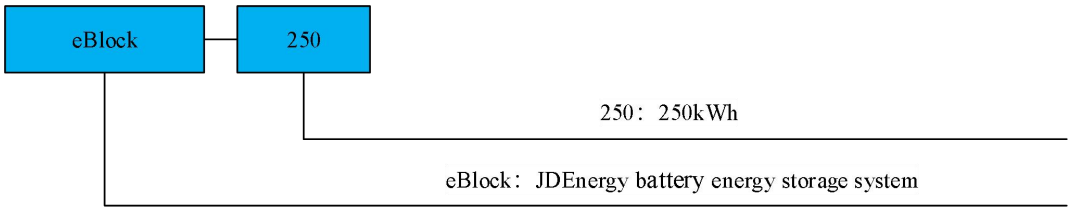


图 2-1智慧能量块型号说明

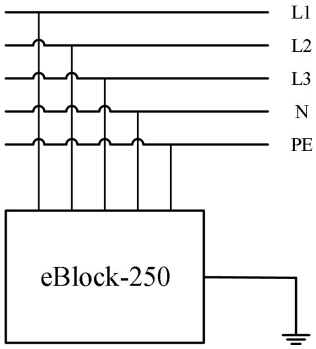
Fig. 2-1 Description of Smart eBlock Model

2.1.3 电网形式

2.1.3 Power grid form

eBlock-250系列智慧能量块支持的电网连接方式为TN-S电网。

The eBlock-250 series smart eBlock supports TN-S power grid for connection.



2.2 外观介绍

2.2 Appearance Introduction

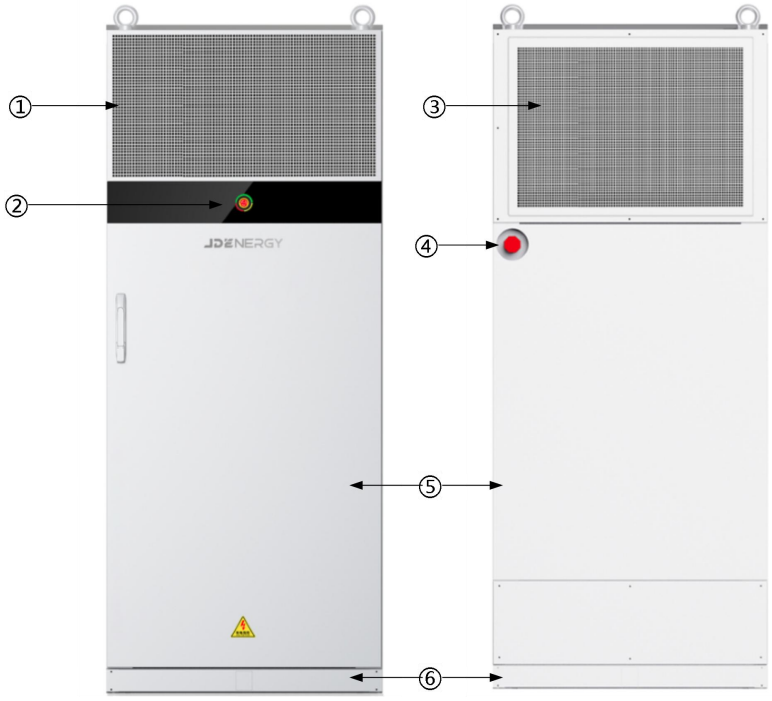


图 2-3 智慧能量块外观示意

Fig. 2-3 Appearance of Smart eBlock

注：以上图片仅供参考，请以收到的实物为准！

Note: The above picture is for reference only. Please refer to the actual product received!

表2-1智慧能量块外观说明

Table 2-1 Appearance Description of Smart eBlock

编号 No.	说明 Description
1	进风口 Air inlet
2	状态指示灯与急停开关 Status indicator and E-stop switch
3	出风口 Air outlet
4	应急水接口 Emergency water interface
5	柜体 Cabinet
6	底座 Base

2.3 内部布局

2.3 Internal Layout

智慧能量块内部布局如图 2-4 所示：

The internal layout of the smart eBlock is shown in Fig. 2-4:

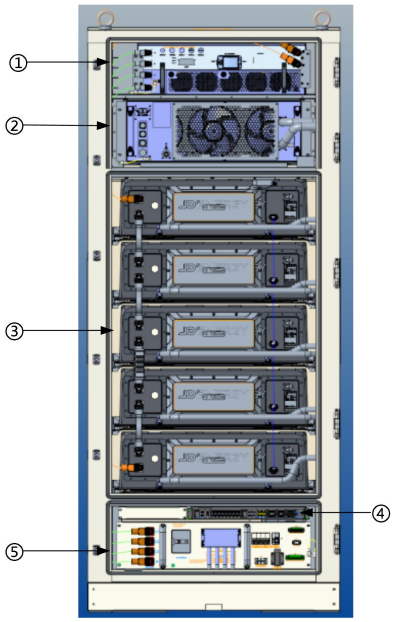


图 2-4 智慧能量块内部布局示意

Fig. 2-4 Internal Layout of Smart eBlock

注：以上图片仅供参考，请以收到的实物为准！

Note: The above picture is for reference only. Please refer to the actual product received!

表 2-2 智慧能量块内部布局说明

Table 2-2 Internal Layout Description of Smart eBlock

编号 No.	说明 Description
1	储能变流器（PCS） PCS
2	冷水机组 Water cooling unit
3	电池模块（pack） Battery module (pack)
4	eLink/交换机（选配） eLink/switch (optional)
5	配电箱 Distribution box

2.4 配电箱面板介绍

2.4 Introduction to Distribution Box Panel

智慧能量块对外接线端子位于配电箱面板处，如图2-5所示：

The external terminals of the smart eBlock are located at the distribution box panel, as shown in Fig. 2-5:

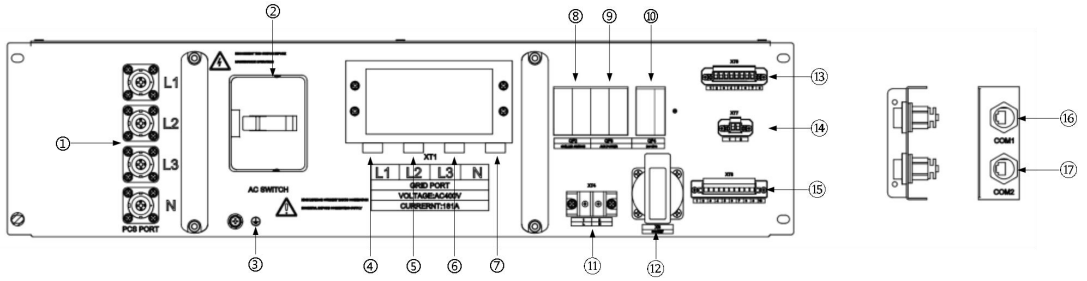


图 2-5 智慧能量块高压箱面板

Fig. 2-5 HV Box Panel of Smart eBlock

注：以上图片仅供参考，请以收到的实物为准！

Note: The above picture is for reference only. Please refer to the actual product received!

表 2-3 智慧能量块高压箱面板详细说明

Table 2-3 Detailed Description of HV Box Panel of Smart eBlock

编号 No.	说明 Description
1	PCS交流L1、L2、L3、N相接口（已连接完成）

	PCS AC L1, L2, L3, N-phase interface (already connected)
2	交流主开关 AC master switch
3	接地连接点 Grounding connection point
4	外部电网交流L1相接口，推荐95mm²铜缆，SC95端子，M8螺栓，6N·m力矩 External power grid AC L1-phase interface, 95mm² copper cable, SC95 terminal, M8 bolt and 6N·m torque are recommended
5	外部电网交流L2相接口，推荐95mm²铜缆，SC95端子，M8螺栓，6N·m力矩 External power grid AC L2-phase interface, 95mm² copper cable, SC95 terminal, M8 bolt and 6N·m torque are recommended
6	外部电网交流L3相接口，推荐95mm²铜缆，SC95端子，M8螺栓，6N·m力矩 External power grid AC L3-phase interface, 95mm² copper cable, SC95 terminal, M8 bolt and 6N·m torque are recommended
7	外部电网交流N相接口，推荐95mm²铜缆，SC95端子，M8螺栓，6N·m力矩 External power grid AC N-phase interface, 95mm² copper cable, SC95 terminal, M8 bolt and 6N·m torque are recommended
8	冷水机组开关 Water cooling unit switch
9	辅助电源开关 Auxiliary power switch
10	DC UPS开关 DC UPS switch
11	冷水机组230V电源接口（已连接完成） 230V power interface of water cooling unit (already connected)
12	230VAC插座 230VAC socket
13	24VDC电源接口（已连接完成） 24VDC power interface (already connected)
14	除湿器电源接口（已连接完成） Power interface of dehumidifier (already connected)
15	内部通讯接口（已连接完成） Internal communication interface (already connected)
16	COM1，智慧能量块对外通讯接口 COM1, external communication interface of smart eBlock
17	COM2，智慧能量块对外同步接口 COM2, external synchronization interface of smart eBlock

2.5 显示面板

2.5 Display Panel

智慧能量块显示面板如图2-6所示：

The display panel of the smart eBlock is shown in Fig. 2-6:

图 2-6 显示面板

Fig. 2-6 Display Panel

表2-4 显示面板状态说明

Table 2-4 Status Description of Display Panel

编号 No.	名称 Name	状态 Status	说明 Description
1	故障 Fault	红色：常亮 Red: normally on	停机故障 Shutdown fault
		红色：闪烁 Red: flashing	非停机故障 Non shutdown failure
	正常 Normal	绿色：常亮 Green: normally on	无故障 No fault
	面板升级 Panel upgrade	黄色：闪烁 Yellow: flashing	显示面板程序升级 Display panel program upgrade
2	电源 Power supply	绿色：常亮 Green: normally on	控制电源供电正常 Normal control power supply
		绿色：熄灭 Green: off	控制电源未供电或供电异常 No control power supply or abnormal control power supply
3	运行状态 Running status	绿色：从左往右 Green: from left to right	充电（共5格），每格表示20%电量 Charging (5 grids in total), with each grid representing 20% battery power
		绿色：呼吸灯闪烁 Green: breathing light flashing	放电（共5格），每格表示20%电量 Discharging (5 grids in total), with each grid representing 20% battery power
		绿色：常亮 Green: normally on	显示当前电量，每格表示20% Display the current battery power, with each grid representing 20%

		绿色：熄灭 Green: off	系统未运行或系统电量为0 System is not running or system power capacity is 0
		绿色：左右循环闪烁 Green: right and left flashing circularly	系统启动中 System is starting
4	急停按钮 E-stop button	按下 Press down	紧急停机 Emergency shutdown
		旋起 Turn up	正常状态 Normal status
1/2/3	系统升级 System upgrade	绿色：闪烁 Green: flashing	系统软件升级中 System software is being upgraded

2.6 安全系统

2.6 Safety System

安全系统说明见表2-5，表2-6。

The description of safety system is shown in Table 2-5 and Table 2-6.

表 2-5 气溶胶说明

Table 2-5 Description of Aerosol

编号 No.	名称 Name	参数 Parameters
1	气溶胶 Aerosol	100g
2	启动方式 Starting mode	电启动 Electrical starting
3	型号 Model	100E
4	认证 Certification	CE/UL

表 2-6 应急水接口说明

Table 2-6 Description of Emergency Water Interface

编号 No.	名称 Name	参数 Parameters
1	系统类型 System type	湿式系统 Wet system
2	机柜外部接口 Cabinet external interface	KM型卡扣式65管牙接口 KM snap-on 65 pipe threaded interface
3	喷头类型 Nozzle type	闭式喷头 Closed nozzle
4	启动温度	93℃

	Starting temperature	
5	系统接口所需水压力 Water pressure required for system interface	0.2Mpa/20m
6	持续注水时间 Continuous water injection time	2h
7	最低用水量 Minimum water consumption	54m^3

3智慧能量块存储

3. Smart eBlock Storage

因电池长期存储会存在容量衰减，所以不建议智慧能量块长期存储。如果智慧能量块不立即投入使用，则存储智慧能量块时需满足：

It is not recommended to store the smart eBlock for a long time because the capacity attenuation of batteries exists during long-term storage. If the smart eBlock is not immediately put into use, its storage must meet the following conditions:

✓存储时间不超过1个月，温度应保持在–35℃～50℃；相对湿度应保持在5%RH～85%RH。

✓If the storage time is not exceeding 1 month, the temperature should be maintained between -35℃ and 50℃; Relative humidity should be maintained between 5%RH and 85%RH.

✓存储时间超过1个月，温度应保持在5ºC～35ºC；相对湿度应保持在5%RH～85%RH。

✓If the storage time is exceeding 1 month, the temperature should be maintained between 5℃ and 35℃; Relative humidity should be maintained between 5%RH and 85%RH.

✓智慧能量块电量不低于30%，期间需要定期检查并补充电（整机充满电，再放电至剩余30%~40%电量），补充电时冷水机组需要运行，并将电池温度控制在20℃~35℃之间：

✓The smart eBlock should have a power no less than 30%, and should be regularly checked and recharged during the period (the whole machine should be fully charged, and then discharged to the remaining 30%-40% power). During recharging, the water cooling unit needs to be running, and the battery temperature should be controlled between 20℃ and 35℃:

-35℃~30℃建议补电周期为6个月；

The recommended recharge cycle is 6 months from -35℃ to 30℃;

30℃~45℃建议补电周期为3个月；

The recommended recharge cycle is 3 months from 30℃ to 45℃;

45℃~60℃建议补电周期为1个月。

The recommended recharge cycle is 1 month from 45℃ to 60℃.

✓存放在清洁干燥的地方，并防止灰尘及水汽的侵蚀。

✓It should be stored in a clean and dry place and protected from dust and water vapor.

✓经过长期存放后，智慧能量块需经过专业人员的检查和测试才能投入使用。

✓After long-term storage, the smart eBlock requires professionals' inspection and testing before putting it into use.

4 安装

4. Installation

4.1 机械安装

4.1 Mechanical Installation

4.1.1 基本安装要求

4.1.1 Basic installation requirements

（1）安装场地应满足5吨的承重要求，确保坚固可靠，能够长时间支撑智慧能量块的重量。

(1) The installation site should have a bearing capacity of no lower than 5 tons and is sturdy and reliable enough to support the smart eBlock for a long time.

（2）智慧能量块在运行过程中局部温度（如出风口）会比较高。请勿与易燃材料安置在一起。

(2) Given the local temperature (e.g. the air outlet) of the smart eBlock is relatively high during operation, please do not place it with flammable materials.

勿将本产品安装在含有可燃性气体的空间里。

Do not install the product in spaces containing flammable gases.

4.1.2 安装环境要求

4.1.2 Installation environment requirements

（1）安装场地环境温度为-25°C～45°C，安装环境清洁。

(1) The installation site should be kept at a temperature of -25°C - 45°C and should be clean.

最高环境温度：45°C

Max. environment temperature: 45°C

最低环境温度：-25°C

Min. environment temperature: -25°C

图4-1 智慧能量块安装环境的温度图

Fig. 4-1 Temperature Map of the Installation Environment for Smart eBlock

（2）柜体外形尺寸

(2) Overall dimensions of the cabinet

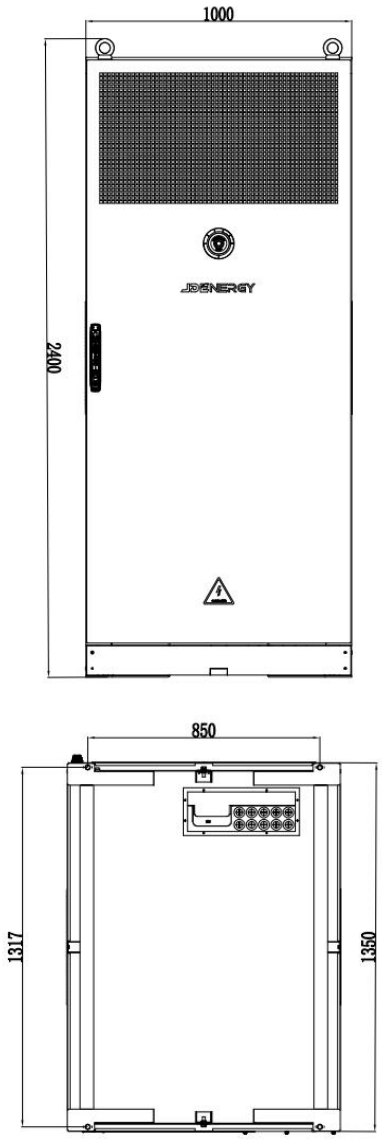


图4-2 智慧能量块安装空间尺寸

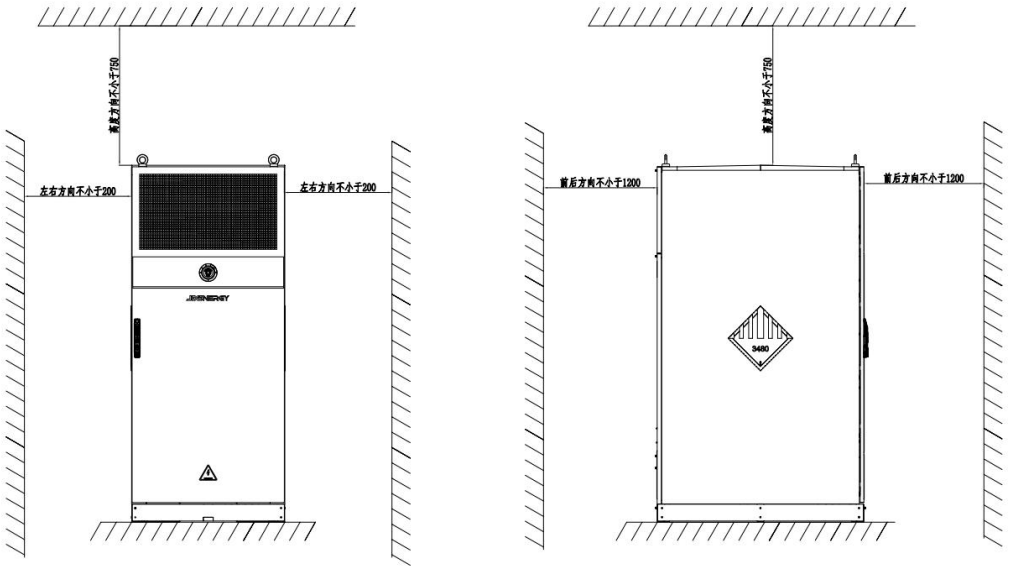
Fig. 4-2 Installation Space Size of Smart eBlock

注：以上图片仅供参考，请以收到的实物为准！

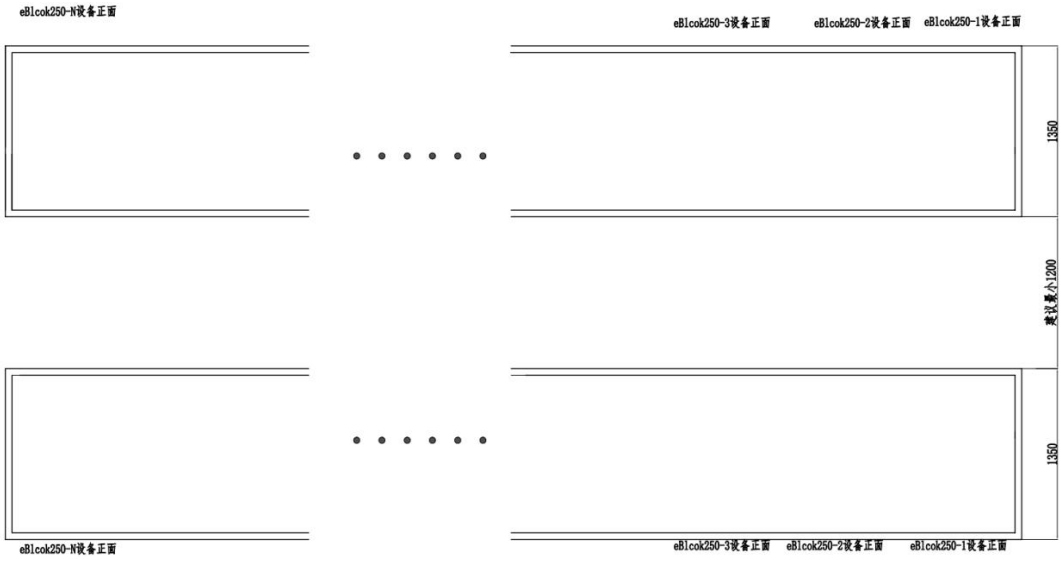
Note: The above picture is for reference only. Please refer to the actual product received!

（3）安装智慧能量块时，需要在智慧能量块周围预留一定的空间距离，以确保散热通畅，安装空间需求请参考图4-3。

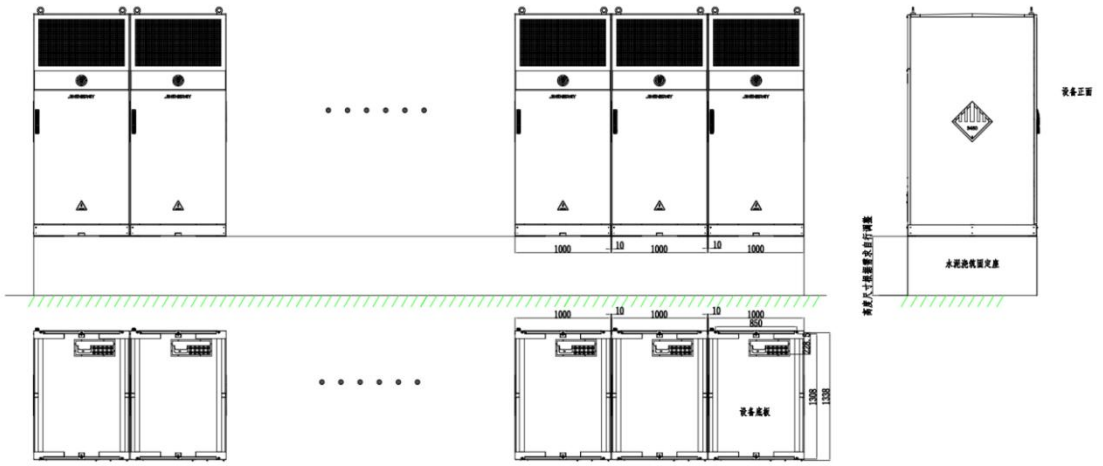
(3) When installing the smart eBlock, a certain spatial distance should be reserved around to ensure smooth heat dissipation. Please refer to Fig. 4-3 for installation space requirements.



左右方向不小于200 Not less than 200 in the left-right direction	高度方向不小于750 Not less than 750 in the height direction	前后方向不小于1200 Not less than 1,200 in the front-rear direction



eBlock250-N设备正面 eBlock250-N Front View	eBlock250-3设备正面 eBlock250-3 Front View	eBlock250-2设备正面 eBlock250-2 Front View
eBlock250-1设备正面 eBlock250-1 Front View	建议最小1200 A minimum of 1,200 is recommended	



设备正面 Equipment Front View	水泥浇筑固定座 Cement poured fixed seat	高度尺寸根据需求自行调整 Height and size can be adjusted according to the requirements
设备底板 Equipment base plate		

图4-3 智慧能量块安装空间尺寸

Fig. 4-3 Installation Space Size of Smart eBlock

4.1.3 安全说明

4.1.3 Safety instructions

作为电子产品，触摸到带电部分都存在危险。

Being an electronic product, it is dangerous to touch any live parts.

	**警告！**安装和维护前保证交流侧不带电。 **Warning!** Before installation and maintenance, ensure that the AC side is unenergized.
	**注意！** **Attention!** 本装置必须请专业电工进行安装。 This device must be installed by a professional electrician.

4.1.4 安装需求

4.1.4 Installation requirements

4.1.4.1安装流程说明

4.1.4.1 Installation process description

智慧能量块的安装流程如表4-1所示。

The installation process of the smart eBlock is shown in Table 4-1.

表4-1 安装流程说明

Table 4-1 Installation Process Description

步骤 Steps	操作 Operation	说明 Description
1	安装前检查 Check before Installation	在安装之前，需要检查外包装有无破损。 Before installation, check whether the outer package is damaged.
2	准备安装工具 Prepare installation tools	在安装之前，需要准备相应工具，以便顺利安装和接线。 Before installation, prepare corresponding tools to facilitate smooth installation and wiring.
3	检查安装位置 Check installation site	检查待安装的位置，以保证eBlock-250能够正常、可靠地工作。 Check the installation site to ensure that the eBlock-250 works properly and reliably.
4	安装eBlock-250 Install eBlock-250	将eBlock-250安装在基座上。 Install eBlock-250 on the base.

4.1.4.2安装前检查

4.1.4.2 Check before installation

安装前请检查附件是否齐全，如表4-2所示。

Please check if the fittings are complete before installation, as shown in Table 4-2.

表4-2 安装前检查项目

Table 4-2 Check Items before Installation

编号 No.	名称 Name	说明 Description
A	智慧能量块 Smart eBlock	eBlock-250系列产品 eBlock-250 series products
B	文档 Documents	其他文档资料 Other documents

4.1.4.3安装工具准备

4.1.4.3 Preparation of installation tools

安装需要使用的工具如表 4-3 所示：

Tools needed for installation are shown in Table 4-3:

表4-3 安装工具清单

Table 4-3 List of Installation Tools

序号 S/N	工具 Tools	用途 Usage
1	十字螺丝刀 Cross screwdriver	螺丝紧固 Tightening screws
2	套筒 Sleeve	交流线缆紧固 Tightening AC cables

3	斜口钳 Diagonal plier	剪扎线带 Shearing and binding cable ties
4	剥线钳 Wire stripper	剥离线缆表皮 Stripping cable sheath
5	工具刀 Utility knife	拆包装等 Unpacking, etc.
6	剪线钳 Wire cutter	剪断电源线缆 Cutting power cables
7	压线钳 Wire crimper	压线 Crimping wires
8	万用表（2500V量程） Multimeter (range of 2,500V)	测试接地连接等是否正确 Testing whether the grounding connection is correct
9	记号笔 Marking pen	标注记号 Marking signs
10	钢卷尺 Steel tape	测量距离 Measuring the distance
11	绝缘手套 Insulating gloves	安装设备时操作者佩戴 Worn by the operator during installation
12	力矩扳手 Torque wrench	检验扭矩 Inspecting the torque
13	绝缘电阻测量仪 Insulation resistance tester	安规测试 Safety regulation test

4.1.4.4安装位置要求

4.1.4.4 Installation site requirements

警告！

Warning!

智慧能量块的出风口温度可达到70℃。请勿与易燃材料安置在一起！

The air outlet temperature of the smart eBlock can be up to 70℃. Please do not place it with flammable materials!

勿将本产品安装在含有可燃性气体的空间里。

Do not install the product in spaces containing flammable gases.

注意！

Attention!

安装位置不得妨碍断开设备电源。

The installation site shall not hinder the disconnection of equipment power supply.

安装条件检查时，需要考虑以下要求：

When checking installation conditions, it is necessary to consider the following requirements:

✓智慧能量块的安装位置应便于电气连接和维护；

✓The installation site of the smart eBlock should facilitate electrical connection and maintenance;

✓智慧能量块应为垂直安装，其倾角不大于2°；

✓ The smart eBlock should be installed vertically with an inclination of no more than 2°;

✓智慧能量块应安装在通风的环境下，以便于良好的散热；

✓ The smart eBlock should be installed in environments with good ventilation to facilitate heat dissipation;

✓另外智慧能量块前方、后方应留有足够间隙便于观察数据、维护及空调散热。

✓The surroundings of the smart eBlock should be sufficient for easy data observation, maintenance and air conditioner heat dissipation;

4.1.4.5安装方式

4.1.4.5 Installation method

智慧能量块目前支持两种安装方式：混凝土底座和钢构底座。混凝土底座中间部分可以预留充足的安装空间，但前期需投入土建，钢构底座相对简单，只需基础的水泥地面找平就可以安装，安装便捷；

整机吊装方式相同，具体步骤如下：

步骤 1：拆除智慧能量块的包装材料，将智慧能量块吊装到基座合适的位置，参考图 4-4。

Step 1: Remove the packing material of smart eBlock, and hoist the smart eBlock to an appropriate position on the base, as shown in Fig. 4-4.

✓整机采用双绳吊装，单绳承重不小于3T，单个D型扣承重不小于2T；

✓The whole machine is hoisted with double ropes. The bearing capacity of a single rope is not less than 3T, and that of a single D-buckle is not less than 2T;

✓单根吊绳长度不小于4m，保证吊绳角度小于40度；

✓The length of a single lifting rope is not less than 4m, and the angle of lifting ropes is less than 40°;

✓吊绳末端与柜顶吊环之间用4个D型扣连接。

✓The ends of lifting ropes are connected to lifting rings on the top of the cabinet by four D-buckles.

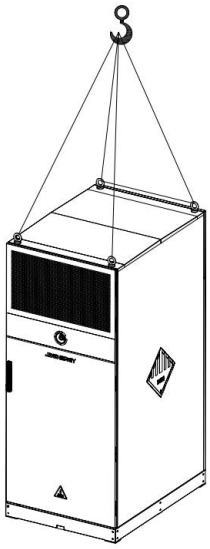


图 4-4 吊装示意图

Fig. 4-4 Hoisting Diagram

1、混凝土底座安装方式如下：

步骤 2：将智慧能量块放置到安装基础上，将机柜底座和安装基础的槽钢焊接固定，安装基础参考图 4-5。

Step 2: Place the smart eBlock on the installation foundation, and weld and fix the cabinet base and the installation foundation U-steel. Refer to Fig. 4-5 for the installation foundation.

✓机柜放置在地基上，调整前后左右位置；

✓Place the cabinet on the foundation and adjust its front / rear / left / right position;

✓将机柜底座和地基槽钢焊接处理，具体安装位置参考示意图，注意前后4个安装孔只作为运输安装孔；

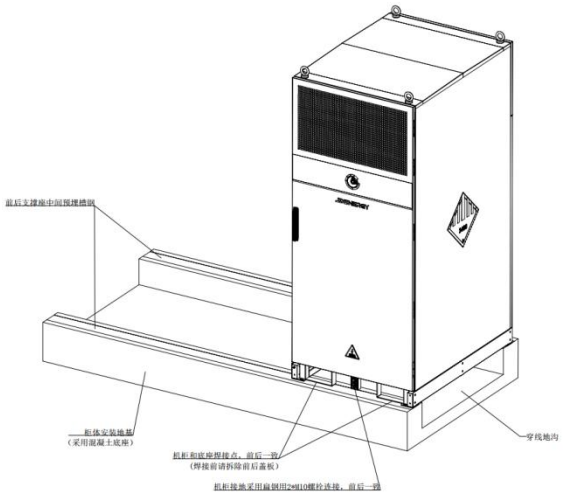
✓Weld the cabinet base and foundation U-steel. Refer to the diagram for the specific installation position, and note that the four front and rear mounting holes are only used as transport mounting holes;

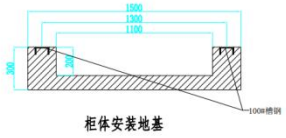
✓用扁钢连接前后接地点，保证整柜接地点和地排导通；

✓ Connect the front and rear grounding points with a flat steel to ensure the conduction of grounding points of the entire cabinet and the grounding bar;

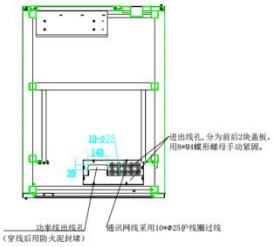
✓详细安装方式参考项目施工图。

✓Refer to the project construction drawing for detailed installation methods.





柜体安装地基



柜体底座出线方式

前后支撑座中间预埋槽钢 Pre-embedded U-steel between front and rear supporting seats	柜体安装地基（采用混凝土底座） Cabinet installation foundation (concrete base is used)	穿线地沟 Wiring trench
机柜和底座焊接点，前后一致（焊接前请拆除前后盖板） Welding points of the cabinet and base are consistent in front and back (please remove the front and rear cover plates before welding)	机柜接地采用扁钢用2*M10螺栓连接，前后一致 Cabinet grounding is achieved by a flat steel connected with 2*M10 bolts, which are consistent in front and back	柜体安装地基 Cabinet installation foundation
100#槽钢 100# U-steel	进出线孔，分为前后2块盖板，用8*M4蝶形螺母手动紧固。 Inlet and outlet holes, divided into two front and rear cover plates, which are manually tightened with 8*M4 butterfly nuts.	功率线出线孔（穿线后用防火泥封堵） Power line outlet hole (plugged with fireproofing mud after threading)
通讯网线采用10*Ø25护线圈过线 10*Ø25 wire grommet is used for communication network cable		

图 4-5 安装基础示意图

Fig. 4-5 Installation Foundation Diagram

2、钢构底座安装方式如下：

步骤 2：将智慧能量块放置到钢构底座上，将机柜底座和钢构底座用螺栓紧固，安装基础参考图 4-5。

✓将钢构底座依照图纸要求依次摆放在水泥地面上，调整好前后左右距离，用M10膨胀螺栓紧固，相邻框架用并柜件连接，采用M8*20螺栓紧固；

✓将机柜吊装放置在钢构底座上，调整前后左右位置，使其安装孔和钢构底座

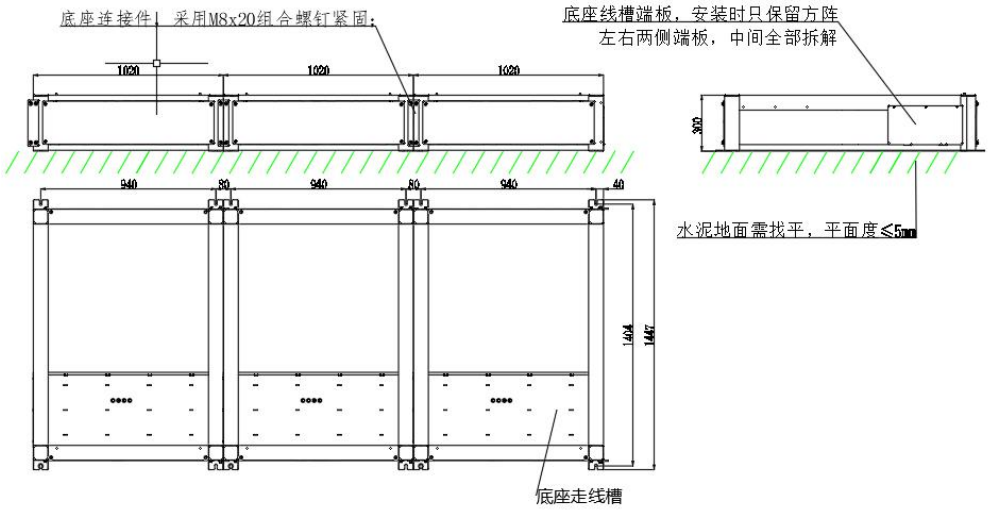
对齐，并用M10*60螺栓组件紧固；

✓用扁钢连接前后接地点，保证整柜接地点和地排导通；

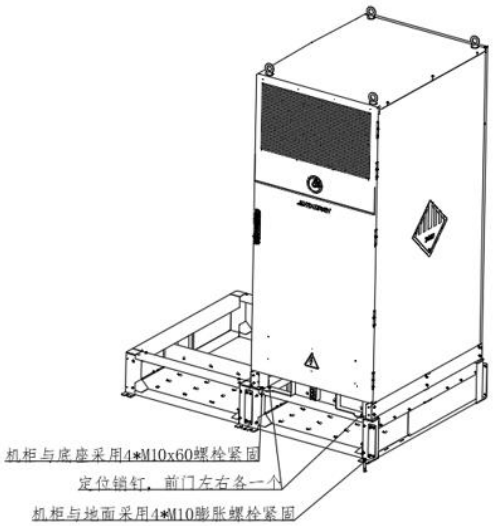
✓ Connect the front and rear grounding points with a flat steel to ensure the conduction of grounding points of the entire cabinet and the grounding bar;

✓详细安装方式参考项目施工图。

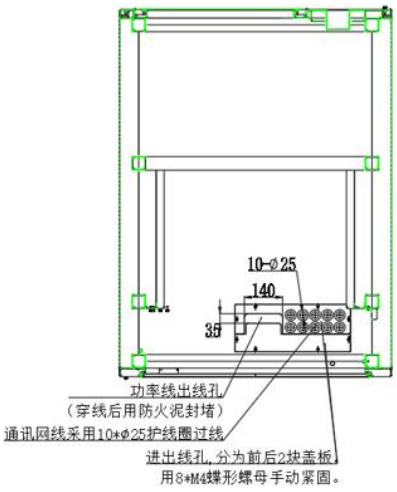
✓Refer to the project construction drawing for detailed installation methods.



底座布局图



柜体、底座紧固



柜体底座出线方式

水泥地面需找平，平面度≤5mm	柜体底座（采用钢构底座）	底座走线槽
机柜接地采用扁钢用2*M10螺栓连接，前后一致 Cabinet grounding is achieved by a flat steel connected with 2*M10 bolts, which are consistent in front and back	进出线孔，分为前后2块盖板，用8*M4蝶形螺母手动紧固。 Inlet and outlet holes, divided into two front and rear cover plates, which are manually tightened with 8*M4 butterfly nuts.	功率线出线孔（穿线后用防火泥封堵） Power line outlet hole (plugged with fireproofing mud after threading)

通讯网线采用10*Ø25护线圈过线 10*Ø25 wire grommet is used for communication network cable		

图 4-6 安装基础示意图

Fig. 4-6 Installation Foundation Diagram

步骤 3：安装完毕。

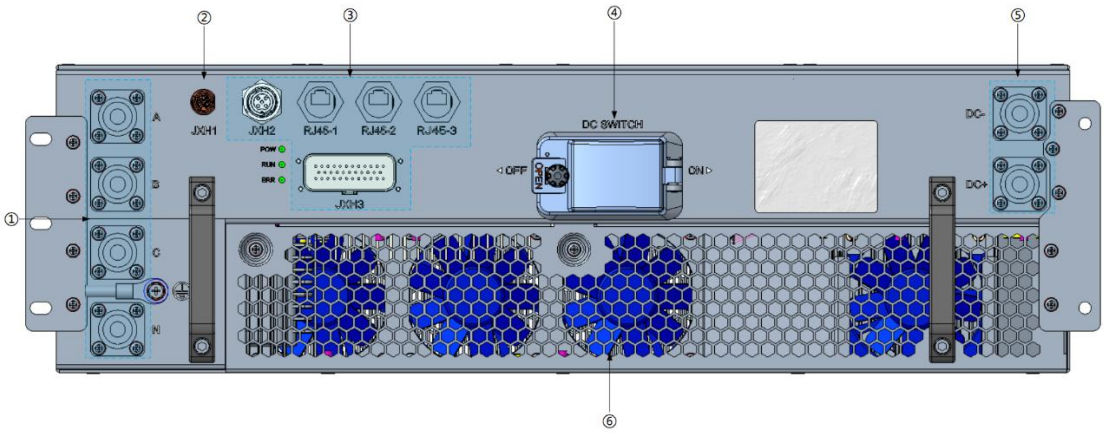
Step 3: Installation is completed.

4.2 电气连接

4.2 Electrical Connection

4.2.1PCS电气连接

4.2.1 Electrical connection of PCS



注：以上图片仅供参考，请以收到的实物为准！

Note: The above picture is for reference only. Please refer to the actual product received!

表 4-4 PCS外观说明

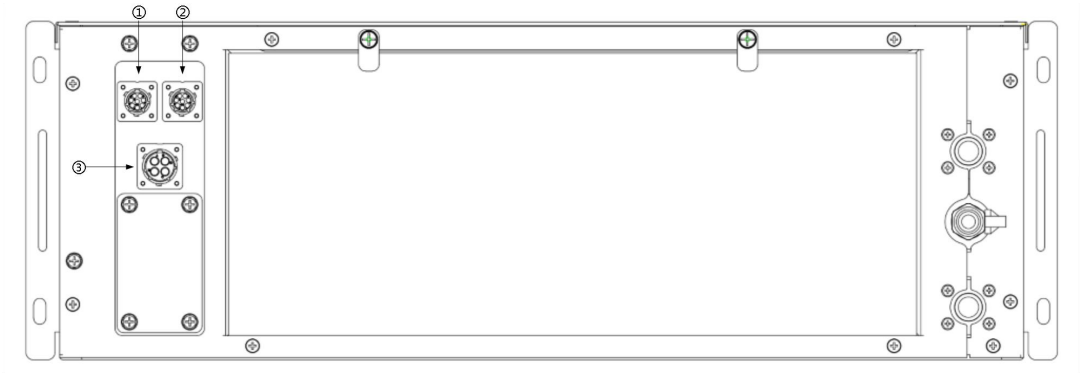
Table 4-4 PCS Appearance Description

编号 No.	说明 Description
1	交流接线区域（已连接完成） AC wiring area (already connected)
2	外供电接口（已连接完成） External power supply interface (already connected)
3	通讯接线区域（已连接完成） Communication wiring area (already connected)
4	直流开关 DC switch
5	直流接线区域（已连接完成）

	DC wiring area (already connected)
6	进风区域 Air inlet area

4.2.2冷水机组电气连接

4.2.2 Electrical connection of water cooling unit



注：以上图片仅供参考，请以收到的实物为准！

Note: The above picture is for reference only. Please refer to the actual product received!

编号 No.	说明 Description
1	调试维护接口 Commissioning & maintenance interface
2	通讯接口（已连接完成） Communication interface (already connected)
3	供电电源接口（已连接完成） Power supply interface (already connected)

4.2.3并机连接

4.2.3 Parallel connection

eBlock并机连接根据方阵内eBlock数量不同分为以下两种方案：

Parallel connection of eBlock can be divided into the following two options according to the number of eBlocks in the array:

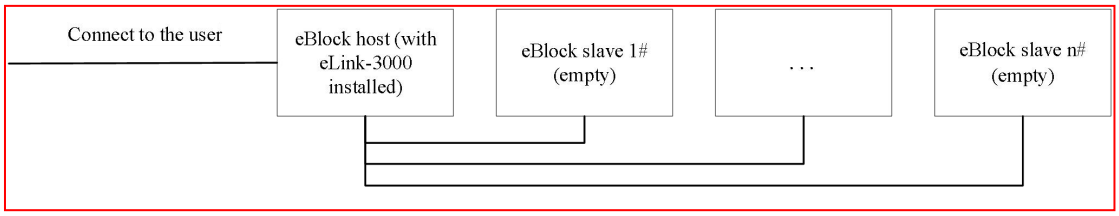
方案一：eBlock直接连接eLink-3000

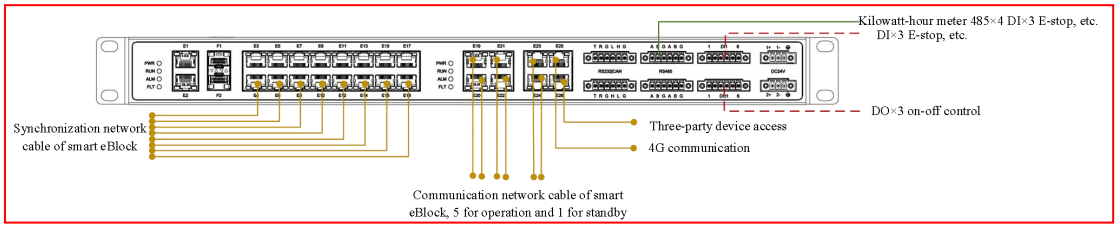
Option 1: Connect eBlocks directly to eLink-3000

整机预留插箱位置，当方阵内eBlock数量≤5台时，选择1台作为主机装配eLink-3000，其余eBlock作为从机直接连接eLink-3000，eBlock主机对外接入用户本地控制系统。eLink-3000预留一个接口用于调试备用，可以满足较多的工商业小容量方阵接入，通过上位机设置直连模式进行系统通讯配置。接线位置如下图所示：

Reserve plug-in box positions for the whole machine. When the number of eBlocks in the array is ≤5, select 1 as the host to assemble eLink-3000, and connect the rest

eBlocks directly to eLink-3000 as slaves. The eBlock host is externally connected to the user's local control system. The eLink-3000 has a reserved interface for commissioning, which can meet the access of more industrial and commercial small-capacity arrays, and conduct system communication configuration by setting the direct connection mode on the upper computer. The wiring positions are shown in the figure below:



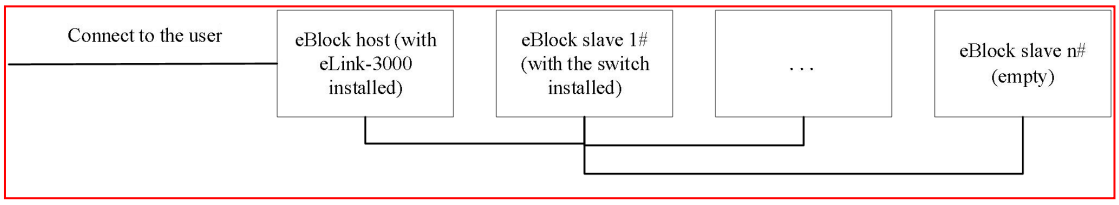


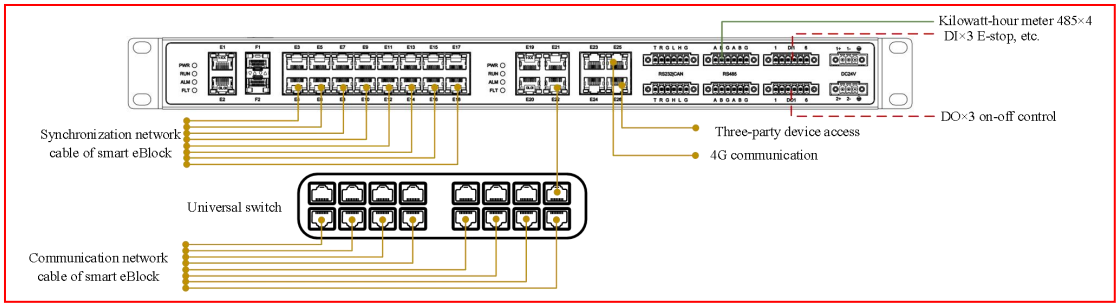
方案二：通过交换机连接

Option 2: Connect through a switch

整机预留插箱位置，当方阵内eBlock数量＞5台时，选择1台作为主机装配eLink-3000，1台装配交换机，其余eBlock作为从机插箱位置留空。所有eBlock从机对外通讯网线接入交换机再接入eLink-3000，eBlock主机对外接入用户本地控制系统。接线位置如下图所示：

Reserve plug-in box positions for the whole machine. When the number of eBlocks in the array is >5, select 1 as the host to assemble eLink-3000 and 1 to assemble the switch, and take the rest eBlocks as slaves, with plug-in box positions being empty. All eBlock slaves are connected to the switch via external communication network cables and then connected to eLink-3000, while the eBlock host is externally connected to the user's local control system. The wiring positions are shown in the figure below:





4.2.4接地连接

4.2.4 Grounding connection

接地要求

Grounding requirements

(1)对设备进行任何操作前，必须确保其已经接地；拆除设备时，最后拆除接地线。

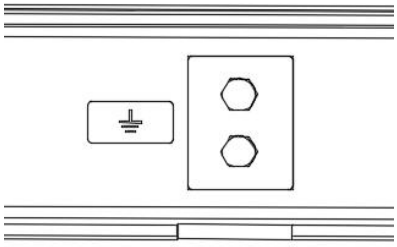
(1) Make sure that the equipment has been grounded before performing any operation on it; Remove the grounding wire at last when removing the equipment.

(2)严禁地线上加装熔断器、开关等设备。

(2) It is strictly prohibited to install fuses, switches and other devices on the ground wire.

接地连接

Grounding connection



将接地扁钢连接于eBlock-250底座接地排上，接地螺栓为M10，连接接地扁钢截面推荐50mm*5mm。

Connect the grounding flat steel to the eBlock-250 base grounding bar using M10 grounding bolts. The recommended cross section for connecting the grounding flat steel is 50mm*5mm.

4.2.5通讯地址设置

4.2.5 Communication address setting

现场调试安装时通信地址由安装工程师设置。

When performing on-site commissioning and installation, the communication address

should be set by the installation engineer.

4.3安装后检查

4.3 Check after Installation

设备完成安装后请参考下表中列举信息进行再次检查，仅当全部检查通过后才允许上电开机。

After installing the equipment, please refer to the table below to re-check it. Power on and startup are only allowed after all checks are passed.

序号 S/N	检查项 Check Items	检查标准 Check standard
1	设备外观 Equipment appearance	1、设备完好，无损坏，无锈蚀和掉漆。如有掉漆，请进行补漆操作 1. The equipment is intact, free of damage, rust or paint peeling. In case of paint peeling, please repaint it 2、设备标签清晰可见，损坏的标签要及时更换 2. The equipment label is clear and visible, and damaged label should be replaced in a timely manner
2	线缆外观 Cable appearance	1、线缆保护层包裹完好无明显损坏 1. The cable protective layer is intact without obvious damage 2、穿线管线缆完好 2. The conduit cable is intact
3	线缆连接 Cable connection	1、线缆连接位置与设计相同 1. The cable connection position is the same as the design 2、端子制作符合规范，连接牢固可靠 2. The terminal manufacturing meets the standards, and the connection is firm and reliable 3、各线缆两端标签清晰，标签朝向一致 3. Labels on both ends of each cable are clear, with consistent orientation
4	线缆布线 Cable routing	1、走线满足强弱电分离原则 1. The routing meets the principle of separation of strong and weak current 2、线缆整齐美观 2. The cables are neat and beautiful 3、线缆在转弯处留有余量，不得拉紧 3. The cable has a margin at the turning point and should not be tightened 4、走线平直、顺滑、无交叉 4. The routing is straight and smooth, without crossing
5	箱体清洁 Cabinet cleaning	1、箱内干净整洁、无多余线缆、线头、端子和工具等杂物，设备外无明显垃圾 1. The cabinet is clean and tidy inside, without excess cables, wire ends, terminals, tools, and other debris, and there is no obvious garbage outside the equipment

5功能说明及操作流程

5. Function Description and Operation Flow

设备和方阵须由安装工程师调试完成后方可通电运行。

The equipment and array can only be powered on after commissioning by the installation engineer.

注意：设备首次上电运行需要冷水机组控制电池达到适当的工作温度范围后即可按设置的策略自动进行充放电。

Attention: When the equipment is powered on for the first time, the water cooling unit needs to control the battery to reach an appropriate operating temperature range before it can automatically charge and discharge according to the set strategy.

5.1工作模式

5.1 Working Mode

✓待机状态

✓Standby status

系统停止工作，等待满足开机条件的状态。

The status that the system has stopped working and is waiting for the startup conditions to be met.

✓自检状态

✓Self-checking status

储能系统开始并网运行前对自身硬件进行检测的状态，该状态需要检测：DC绝缘阻抗、直流电压采样、交流电压采样、电池电量等关键量。

The status that the energy storage system detects its hardware before starting grid-connected operation, which needs to detect key variables such as DC insulation impedance, DC voltage sampling, AC voltage sampling, and battery level.

✓运行状态

✓Running status

在此状态下，储能变流器处于并网运行状态，将电池的直流电能变换为交流电并入电网，或将电网交流电能转化为直流电能给电池充电。

In this status, the PCS is in grid-connected operation, converting direct current of the battery into alternating current and integrating it into the grid, or converting alternating current of the grid into direct current to charge the battery.

5.2 智慧能量块操作说明

5.2 Operating Instructions of Smart eBlock

智慧能量块在安装、运行和维护中的各种操作说明如表5-1所示：

The instructions for installing, operating and maintaining the smart eBlock as shown in Table 5-1:

表5-1 流程说明

Table 5-1 Instructions of Process

操作 Operation	操作说明 Operation Instruction
并网准备操作 Preparation for grid-connection	●按照接线说明连接好输入输出线路； ●Connect the input and output lines according to the wiring instructions;
	●闭合直流开关；闭合智慧能量块与电网之间的交流断路器。 ●Close the DC switch; Close the AC circuit breaker between the smart eBlock and the power grid. ●通过eMind监控平台设置好运行策略。 ●Set up running strategies through the eMind monitoring platform.
并网操作 Grid connection	储能变流器的输入电压达到储能变流器的启动电压范围策略控制并网，系统会自动启动并网。 When the input voltage of PCS reaches its starting voltage range, the strategy will control grid connection, and the system will automatically start grid connection.
停机操作 Shutdown	如果系统正常运行中需要停机，可以通过以下两种方式进行停机： If the system needs to be shut down during normal operation, there are two ways to shut down: ●可通过远程控制停机； ●Shut down through remote control; ●在紧急情况下，按下面板急停按钮停机。 ●Shut down by pressing E-stop button on the panel in case of emergency.
故障解除操作 Troubleshooting	●由专业技术人员进行故障排除，应将直流开关断开，并且断开智慧能量块与电网之间的断路器。 ● When troubleshooting by professionals, the DC switch should be disconnected and the circuit breaker between the smart eBlock and power grid should be disconnected.

6 系统维护

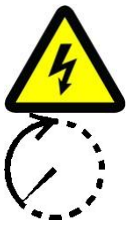
6. System Maintenance

6.1 日常维护

6.1Routine Maintenance

为了保障智慧能量块能够长期良好运行，建议按照本章节的描述对其进行日常维护。

In order to ensure the long-term good operation of the smart eBlock, it is recommended to carry out routine maintenance as specified in this chapter.



注意！

Attention!

请在系统清洁、电气连接、接地可靠性等维护时，先将交流侧与电网连接的断路器断开，再将智慧能量块内直流侧断路器断开。断电后，请等待至少30分钟，再进行操作。

When performing maintenance such as system cleaning, electrical connection and grounding reliability, please first disconnect the circuit breaker connecting the AC side to the power grid, and then disconnect the circuit breaker on DC side inside the smart eBlock. After the power is off, please wait for at least 30 minutes before proceeding with the operation.

表6-1 维护列表

Table 6-1 Maintenance List

检查内容 Check Contents	检查方法 Check Methods	维护周期 Maintenance Interval
系统清洁 System cleaning	定期检查进出风口有无遮挡及灰尘脏污。 Regularly check the air inlet and outlet for obstructions, dust, and dirt.	每半年至一年 Once every six months to a year
系统运行状态 System running status	观察智慧能量块外观是否有损坏或者变形。 Observe if the smart eBlock has any damage or deformation on the appearance. 听智慧能量块在运行过程中是否有异常声音。 Check if there are any abnormal sounds when the smart eBlock is running. 在智慧能量块运行时，检查智慧能量块各参数是否设置正确。 When the smart eBlock is running, check if all parameters are correctly set.	每半年1 次 Once every six months
电气连接 Electrical connection	检查线缆连接是否脱落、松动。 Check if the cable connections are loose. 检查线缆是否有损伤，着重检查电缆与金属表面接触的表皮是都有割伤痕迹。 Check if there is any damage to the cable, with a focus on checking if there are cut marks on the surface of the cable in contact with the metal surface.	首次调试后半年，以后每半年到一年1次 Six months after the first commissioning, and once every six months to a year thereafter

接地可靠性 Grounding reliability	检查接地线缆是否都可靠接地 Check if all grounding cables are reliably grounded	首次调试后半年，以后每半年到一年1次 Six months after the first commissioning, and once every six months to a year thereafter

6.2 故障原因

6.2 Fault Cause

✓外电网连接故障（如：交流线没有连接好）；

✓External power grid connection fault (e.g.: AC line is not properly connected);

✓电池超出工作电压范围；

✓Battery out of operating voltage range;

✓电网欠压（$U_{AC}<U_{AC,min}$）；

✓Grid undervoltage ($U_{AC}<U_{AC,min}$);

✓电网过压($U_{AC}>U_{AC,max}$)；

✓Grid overvoltage ($U_{AC}>U_{AC,max}$);

✓电网频率过低(fAC<fAC,min.)；

✓Grid frequency too low (fAC<$f_{AC,min.}$);

✓电网频率过高($f_{AC}>f_{AC,max.}$)；

✓Grid frequency too high ($f_{AC}>f_{AC,max.}$);

✓输出短路；

✓Output short circuit;

✓储能变流器过温故障。

✓PCS over-temperature fault.

当智慧能量块出现故障时，请先确认智慧能量块的接线是否脱落或是否停电，如故障无法排除，请联系专业技术人员。

When the smart eBlock fails, please first confirm whether its wiring is detached or there is a power outage. If the fault cannot be eliminated, please contact professionals.

6.3 故障诊断

6.3 Fault Diagnosis

针对系统运行中出现的各种故障，系统故障对应的一般诊断方式如下：

The general diagnostic methods for various faults arised during system operation are as follows:

表6-2 故障对照表

Table 6-2 Fault Comparison Table

序号 S/N	故障信息 Fault information	故障类型 Fault type	故障原因 Fault Cause	处理方式 Treatment Method	备注 Remarks
1	DC运行电压异常 Abnormal DC running voltage	DC运行电压高 High DC running voltage	DC运行电压高于储能变流器的限制 The DC running voltage is higher than the limit of PCS	等待恢复正常或联系厂家 Waiting for normal recovery or contacting the manufacturer	恢复正常后自动运行 Automatically run after returning to normal
		DC运行电压低 Low DC running voltage	DC运行电压低于储能变流器的限制 The DC running voltage is lower than the limit of PCS	等待恢复正常或联系厂家 Waiting for normal recovery or contacting the manufacturer	恢复正常后自动运行 Automatically run after returning to normal
2	电网线电压AB/BC/CA异常 Abnormal grid line voltage AB/BC/CA	电网线电压高 High grid line voltage	电网电压高于标准要求 The grid voltage is higher than the standard requirement	检查电网或联系厂家 Check the power grid or contact the manufacturer	电网恢复后自动重新启动 Automatically restart after the power grid is restored
		电网线电压低 Low grid line voltage	电网电压低于标准要求 The grid voltage is lower than the standard requirement	检查电网或联系厂家 Check the power grid or contact the manufacturer	电网恢复后自动重新启动 Automatically restart after the power grid is restored
3	电网频率异常 Abnormal power grid frequency	电网频率高 High power grid frequency	电网频率高于标准要求 The grid frequency is higher than the standard requirement	检查电网或联系厂家 Check the power grid or contact the manufacturer	电网恢复后自动重新启动 Automatically restart after the power grid is restored
		电网频率低 Low power grid frequency	电网频率低于标准要求 The grid frequency is lower than the standard requirement	检查电网或联系厂家 Check the power grid or contact the manufacturer	电网恢复后自动重新启动 Automatically restart after the power grid is restored
4	环境温度过温 Excessive environment temperature	环境温度过高 Too high environment temperature	储能变流器运行环境温度超过限值 The running environment temperature of the PCS exceeds the limit	储能变流器自动停机，等待环境温度正常 The PCS automatically stops, waiting for the environment temperature to be	

				normal	
5	输入绝缘阻抗保护 Input insulation impedance protection	输入绝缘阻抗异常 Abnormal input insulation impedance	输入绝缘阻抗低于标准要求 The input insulation impedance is lower than the standard requirement	检查电池对地情况或联系厂家 Check the battery grounding or contact the manufacturer	

7 技术参数

7. Technical Parameters

型号 Type	eBlock-250
额定功率（kW） Rated power (kW)	125
额定电流（A） Rated current (A)	181
额定电网电压（Vac） Rated grid voltage (Vac)	3W+N+PE /400
电网电压范围（Vac） Grid voltage range (Vac)	323~418
额定电网频率（Hz） Rated grid frequency (Hz)	50/60
额定系统能量（kWh） Rated system energy (kWh)	250
功率因数 Power factor	0.99
电流总谐波畸变率 THD(%) Total distortion rate of current THD (%)	<3
系统参数 System Parameters	
运行温度范围（℃） Running temperature range (℃)	-35～55
运行湿度范围（%） Running humidity range (%)	5～95（无凝露） 5-95 (no condensation)
运行海拔范围 Running altitude range	≤2000m
防护等级（电池舱） IP grade (battery compartment)	IP55
电池冷却方式 Battery cooling mode	液冷 Liquid cooling
噪音（dB） Noise (dB)	<80

保护功能 Protection function	
防孤岛保护 Anti-islanding protection	具有 Available
低电压穿越 Low voltage ride through	具有 Available
高电压穿越 High voltage ride through	具有 Available
直流断路器 DC circuit breaker	具有 Available
直流接触器 DC contactor	具有 Available
DC绝缘阻抗检测保护 DC insulation impedance detection protection	具有 Available
交流侧短路保护 AC side short-circuit protection	具有 Available
浪涌过电流保护 Surge over-current protection	具有 Available
电网电压频率保护 Grid voltage frequency protection	具有 Available
防雷失效检测 Lightning protection failure detection	具有 Available
机械参数 **Mechanical Parameters**	
宽×高×深（mm） W×H×D (mm)	1000*2400*1350
重量（kg） Weight (kg)	约2500 About 2,500
安装方式 Installation mode	落地安装 Floor mounted
通讯与显示 **Communication and Display**	
通讯接口 Communication interface	LAN
显示 Display	LED 指示灯 LED indicator
通讯规约 Communication protocol	ModulBUS TCP

附录

Appendix

A.1 质量保证

A.1 Quality Assurance

本产品在质保期内均可享受维护。以下情况出现，本公司有权不进行质量保证：

Maintenance will be provided for the product during the warranty period. The Company has the right not to provide quality assurance under the following situations:

✓不正确地安装；

✓Incorrect installation;

✓不正确地改装；

✓Incorrect modification;

✓不正确地使用；

✓Incorrect use;

✓任何超出相关国际标准规定安装和使用范围；

✓ Exceeding the installation and usage limits specified by relevant international standards;

✓非正常自然环境引起的损坏。

✓Damage caused by abnormal natural environments.

A.2 联系我们

A.2 Contact Us

如果对本产品有任何问题请与我们联系，详细联系方式如下：

If you have any questions about this product, please contact us. The detailed contact information is as follows:

公司名称：西安奇点能源股份有限公司

Company name: Xi'an JD Energy Co., Ltd.

地址：陕西省西安市高新区毕原一路25号

Add.: No. 25, First Biyuan Road, High-tech Zone, Xi'an City, Shaanxi Province